

# Information Update for the Maryland Square PCE Site

Spring, 2008

**Indoor Air Issue**

<http://www.ndep.nv.gov/pce>

The Nevada Division of Environmental Protection (NDEP) has prepared this information update to help keep residents informed of progress in testing indoor air and installation of home mitigation systems in homes that contained tetrachloroethylene (PCE) vapors at concentrations exceeding the NDEP's health-protective level. Another update providing information on the groundwater cleanup of the Maryland Square PCE Site will be issued later in 2008.

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## Background Levels of PCE in Indoor Air

There are always background levels of chemical vapors in our homes, resulting from consumer products we store in our home, and activities such as remodeling, hobbies, and bringing home dry-cleaned garments. Many of these chemicals are volatile organic compounds (VOCs) such as PCE. Background air quality in our homes varies depending on the consumer products we use, hobbies that we enjoy, where we store our household chemicals, and whether our home has an attached garage, among other factors.

The United States Environmental Protection Agency (US EPA) has collected and analyzed information on PCE levels in indoor and outdoor air. Data compiled for air samples collected inside and outside of buildings that were not near known sources of PCE and other chemicals showed that many homes contain "background levels" of PCE. In fact, data from a number of studies of PCE in indoor air indicate that background levels generally range from 1 to 10 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) of air, but seldom exceed  $10 \mu\text{g}/\text{m}^3$ .

## What is PCE?

The contaminant of concern is perchloroethylene, also known as tetrachloroethylene, "perc", or PCE. It is a colorless, nonflammable liquid that does not occur naturally. PCE is a solvent/degreaser used by dry cleaners to clean fabrics, and is also found in some common household products. The National Institute for Occupational Safety and Health (NIOSH) reports that approximately 85 percent of dry cleaners still use PCE for cleaning clothes. Because PCE is still used in consumer products, many homes have some level of PCE in indoor air.

## Results of Recent Indoor Air Testing in Neighborhood Homes and Schools

During September and October, 2007, the NDEP collected indoor air samples from more than 75 homes and two schools (Ruby S. Thomas Elementary and Orr Middle School). Of these samples, both schools and most homes showed no detections of PCE. However, samples from a few homes contained concentrations of PCE that exceeded NDEP's health-protective level of 32 µg/m<sup>3</sup>. A few other homes had low-level detections of PCE, most of these detected concentrations were within the range of background as defined by several national studies.

In response to these sampling results, the NDEP is currently evaluating home mitigation systems for those homes with PCE levels above the action level for residential indoor air. These treatment systems can be installed to almost immediately reduce the amount of PCE entering the home. Although the situation may concern residents, the NDEP would like to stress that, based on all the data collected for samples of indoor air, there is **no** immediate health concern for residents. The few homes that contained PCE above the health-protective level for long-term exposure did **not** contain concentrations that are known to produce short-term health effects.

A **second round of community outreach and indoor air testing** was conducted in February and early March, 2008. Based on data collected from the initial phase of indoor air testing, the NDEP sent letters to additional home owners and to some residents who received the first notification but did not respond to NDEP's offer of free indoor air sampling. **If your home is in the area where indoor air may be potentially affected, you would have received a letter from the NDEP in early February, 2008.** The NDEP may provide additional notifications in the future, if new information indicates this is necessary. Visit the NDEP website for updates and the most recent reports: <http://www.ndep.nv.gov/pce/>

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## NDEP Plans for Home Mitigation Systems

The recommended technology for residential buildings is adapted from techniques developed with EPA in the 1980s to prevent naturally occurring radon gas from entering homes. Sometimes called a "radon mitigation system" or "sub-slab depressurization system," this technology involves sealing off noticeable cracks in the floors and around piping, and installing a venting pipe beneath the foundation that is connected to a fan. The fan creates a vacuum beneath the foundation that controls and reduces the amount of soil gas entering the home by pulling and venting the vapors to the outdoor air, where concentrations are quickly diluted to low levels in the outdoor air.

The NDEP is currently evaluating the technical merits of various household mitigation systems and technologies. To assist homeowners, the NDEP has evaluated the credentials of a list of qualified contractors, and has solicited bids from them. The bid covers the cost of individual home consultations, installation of mitigation systems, and re-sampling of the indoor air after the mitigation system has been installed and has been in operation for several days. For homes with PCE concentrations found to exceed the action level, **the NDEP will be installing the systems at no cost to the homeowner.** The NDEP will then be seeking reimbursement of costs from the responsible party. Home consultations should take place in April and May, 2008; system installation should be underway in May and June, 2008.

## NDEP's Health-Protective Level for PCE in Indoor Air

The effects of PCE on human health depend upon how much exposure occurs and the length and frequency of the exposure. The U.S. Environmental Protection Agency (EPA) evaluates long-term health concerns based on continuous (24 hours per day) exposure for 30 years or more. The NDEP based its action level for indoor air mitigation (**32  $\mu\text{g}/\text{m}^3$** ) on the evaluation of the U.S. EPA, which conservatively estimates health-protective levels based on exposure for 24 hours per day for 30 years.

It is highly unlikely that any residents living in the area of the Maryland Square PCE plume have been continuously exposed to the contaminant in high concentrations for that length of time. Although the spill may have begun at the dry cleaners when it opened in 1969, preliminary estimates indicate that it may have taken at least 15 years for the PCE to migrate into the groundwater and to the western boundary of the neighborhood. This estimate is based on the current rates and direction of groundwater flow.

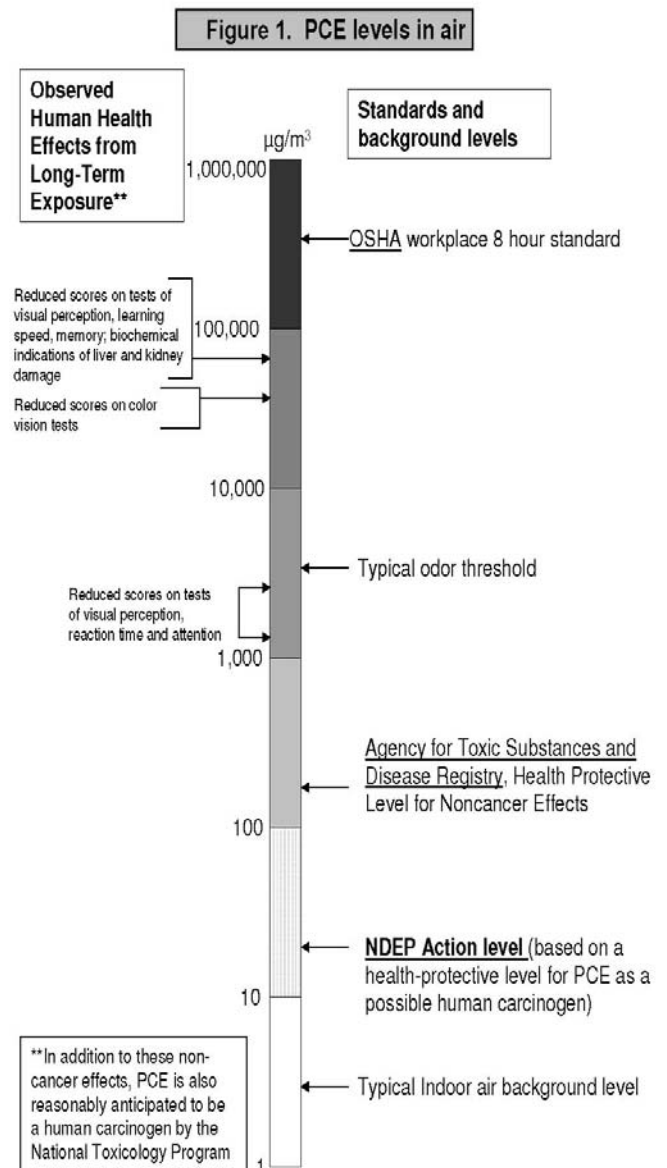
The highest concentrations measured in area homes are still far lower than concentrations that are known to produce immediate short-term health effects. For comparison, the Occupational Safety and Health Administration (OSHA) 8-hour occupational exposure standard is **685,000  $\mu\text{g}/\text{m}^3$**

The NDEP initiated the testing of the indoor air in neighborhood homes as a precautionary measure to let owners know if the concentration of PCE in their indoor air exceeded NDEP's long-term health protective level, and to inform them of the options for mitigating the problem, should the need arise.

**Questions?** Please contact us; we work for the people of Nevada! We can provide updates on the status of the investigations and what is being done to mitigate the PCE vapors and clean up the groundwater.

Call us at the **Maryland Square Resident Call-in Line** at **(702) 486-0975** and leave a message. We will return your call within one business day.

The complete administrative record for the Maryland Square PCE Site, along with additional information on tetrachloroethylene (PCE), is available on the NDEP PCE website.

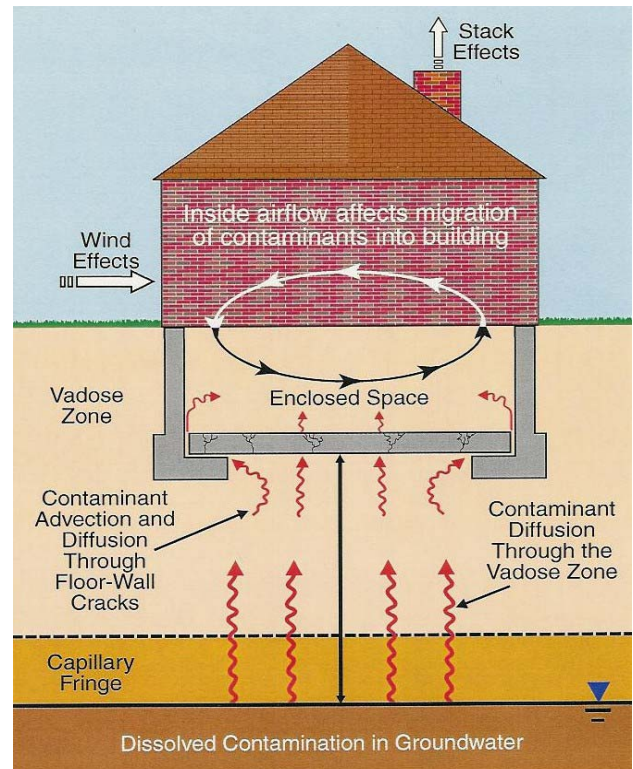


## How Do Solvent Vapors Enter a Building? The Vapor Intrusion Process

PCE-contaminated groundwater travels away from the source area, moving in the direction of groundwater flow. The PCE dissolved in the groundwater evaporates more readily than the groundwater.

As PCE in groundwater evaporates, it creates vapors that fill spaces in subsurface soil. Vapors in the soils above the contaminated groundwater can migrate upward and into buildings that overlie the plume.

Because air pressure inside your home is usually lower than pressure in the soil around your home's foundation, your house acts like a vacuum, drawing vapors in through foundation cracks and other openings. This process is called "vapor intrusion."



## Recent Reports and Upcoming Work

The NDEP adds reports to the Maryland Square PCE website as the documents become available. Recent reports and upcoming work include the following:

- Report on Installation of Downgradient Groundwater Monitoring Wells (Nov 26, 2007)
- 4<sup>th</sup> Quarter 2007 Groundwater Monitoring Report (January 16, 2008)
- Work Plan Addendum for Additional Groundwater Characterization (January 28, 2008)
- Report on Installation of Additional Downgradient Monitoring Wells (March 24, 2008)
- Phase 2 of the public outreach and resident notification took place in February and early March, 2008. Residents in potentially affected areas were offered the opportunity to meet with NDEP representatives and have their indoor air sampled.
- Consultation with homeowners in April and May, 2008 to evaluate homes for installation of mitigation systems in homes that contained PCE vapors at concentrations exceeding the NDEP's health-protective level.

Visit our website for more information and links to other websites that discuss PCE:

<http://www.ndep.nv.gov/pce/>